



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,504	12/12/2003	Norman Arnold Turnquist	129234-1	1902

6147 7590 04/10/2006

GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER
----------

SAVAGE, JASON L

ART UNIT	PAPER NUMBER
----------	--------------

1775

DATE MAILED: 04/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

CUM

<b>Office Action Summary</b>	<b>Application No.</b> 10/735,504	<b>Applicant(s)</b> TURNQUIST ET AL.	
	<b>Examiner</b> Jason L. Savage	<b>Art Unit</b> 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>20031212</u> . | 6) <input type="checkbox"/> Other: ____  |

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rock (US 5,181,826) in view of Walden (US 6,089,825).

Rock teaches a turbine assembly comprising a shroud which provides a seal for minimizing leakage by controlling the blade tip clearance (col. 1, ln. 14-30). Rock further teaches that the shroud **46** is formed on a substantially circular casing **28** base component (col. 3, ln. 65-67). Rock further teaches that during operation of the engine the casing **28** will for a generally elliptical profile.

Rock is silent to providing the base layer with a coating which has the claimed thickness. Walden teaches a turbine assembly comprising a shroud substrate having a thermally sprayed abradable sealing layer formed thereon (col. 3, ln. 23-41). Walden further teaches that as a means to minimize leakage in the turbine assembly, it is known to provide abradable sealing materials on the substrate adjacent to the rotor (col. 1, ln. 35-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the casing **28** in the assembly of Rock by applying the abradable seal of Walden. Furthermore, since Rock teaches that during operation, the casing **28** forms an elliptical shape, it would have been obvious to one of ordinary

Art Unit: 1775

skill to have deposited the seal of Walden having a shape that would minimize leakage during operation of the turbine. As such, the formation of a seal which varied in thickness as a function of circumferential position such as claimed would have been obvious since one would recognize that some areas of the elliptically shaped casing **28** would require a thicker seal coating than others in order to insure that leakage was minimized.

Absent a teaching of the criticality or showing of unexpected results, the claimed varying thickness of the coated seal material would not provide a patentable distinction over the prior art.

Regarding claims 3 and 20, Rock teaches the ellipse has a major axis running between top and bottom portions of the base component (Figure 2).

Regarding claims 4-5, Walden teaches the seal coating thickness is less than 0.635 mm (col. 5, ln. 41-54).

Regarding claims 7 and 23, Walden teaches the seal coating comprises a metal matrix and a secondary phase (col. 5, ln. 41-54).

Regarding claims 8 and 24, although the references do not recite that the metal matrix phase is selected from the claimed materials, MCrAl alloys are known to have desirable properties that make them particularly desirable for use in turbine components. It would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that alternate matrix materials could be employed as the metal matrix material in the abradable seal with a reasonable expectation of success.

Art Unit: 1775

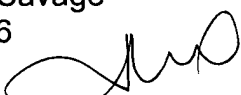
Regarding claims 9, 11, 13, 25, 27 and 29, although the references do not recite the claimed secondary phase materials, it would have been within the purview of one of ordinary skill in the art at the time of the invention to have recognized that alternate second phase materials could be added or substituted for the methyl methacrylate material with a reasonable expectation of success.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Savage whose telephone number is 571-272-1542. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on 571-272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jason Savage  
3-16-06

  
**JENNIFER MCNEIL**  
**PRIMARY EXAMINER**  
3/17/06